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AUTHOR	Bliss, Sam W.
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ABSTRACT

This study provides information about the development and implementation of MIS and PPB systems in State education agencies. Data from two questionnaires covered (1) systems planning and development, and (2) administration and organization. Most States have begun to implement information and PPB systems, but they are hindered by lack of both funds and experienced personnel. The author recommends that State agencies place greater emphasis on information and PPB systems development, and that federal agencies provide more assistance to State and local education agencies. (Author/RA)

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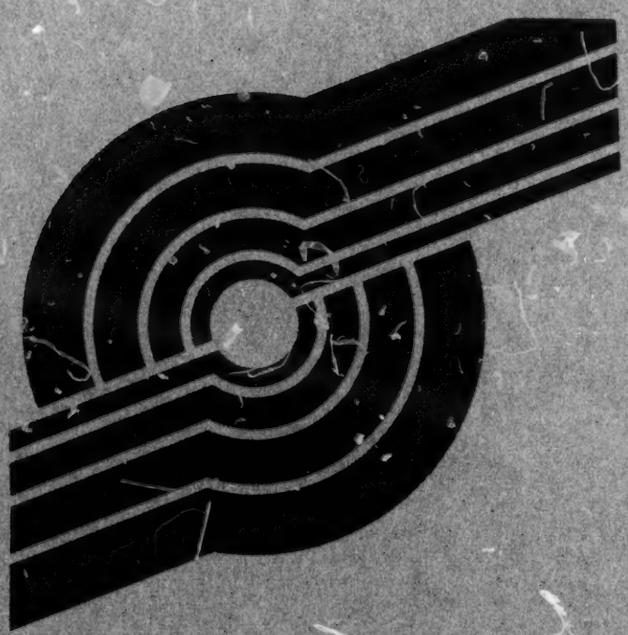
THE EXTENT AND UTILIZATION OF MANAGEMENT INFORMATION SYSTEMS AND PLANNING PROGRAMMING BUDGETING SYSTEMS IN STATE EDUCATIONAL AGENCIES

Report of a Special Study
Sponsored by the Project

Improving State Leadership in Education



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Prepared by
Sam W. Bliss, Director
Educational Resources Management Center
College of Education
Northern Arizona University
Flagstaff, Arizona

Edited by
Edgar L. Morphet, Project Director
and
David L. Jesser, Associate Director
Improving State Leadership in Education

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Introduction

The primary purpose of the study was to provide current information about the development of information and PPB systems in state education agencies. The findings of the study should help to identify the level of state education agency capacity to fulfill planning and leadership roles. Although the questionnaires used were designed to collect facts about information and PPB systems, they were not constructed to evaluate the quality of their development. Limited generalizations, however, may be inferred from the data of the study.

The substantive information provided by this study may be used for comparative purposes and thus should be helpful to personnel of state education agencies and others who are involved in similar activities. An exchange of procedures and facts, for example, might help to reduce costs, prevent certain types of errors, and shorten the time required for the development and implementation of these systems in SEAs.

Other potential uses of the findings generated by this study include the following:

- Modification of situational aspects of current information and PPB systems to make them more conducive to effective leadership.
- Selection of appropriate organizational structures for establishing the systems.
- Planning and conducting seminars and workshops.
- Initiation of new proposals and efforts in the information systems area.

The development of information and PPB systems is recognized as a complex activity, especially within state education agencies. With this in mind, it must be assumed that variances among such agencies, concerning the meanings that are given to information and PPB systems will exist. Because of these conditions the following limitations were observed in this study conducted during the spring of 1970:

- Management Information Systems (MIS) and Planning-Programming-Budgeting and Evaluation Systems (PPBES) were investigated in terms of the administrative organization in state education agencies of the 50 states and the six American Territories.
- Since questionnaires were used as the data collection devices, the usual problem of interpretation on the part of the respondent applies. No attempt was made to qualify in detail all numerical responses.
- The data collected are applicable to a specific point in time and does not apply to changes that may occur within the SEAs after the date of acquisition (Spring 1970).

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Section One

THE EMERGING ROLE OF STATE EDUCATION AGENCIES

In a time of changing concepts and educational needs, it is necessary to adopt a plan of state organization which will be responsive to the changing needs of education. *New programs for planning and leadership at the state level are imperative.* The effectiveness of the state education agency depends on the establishment of a sound philosophy and clearly defined goals of leadership and service, which can be attained by SEA personnel through a combination of four basic structural factors:

1. An effective organization within the state agency;

2. A plan of communication between federal, state, regional, and local educational agencies;

3. The development and implementation of information systems; and

4. A system for equating resources with program effectiveness.

The public school system, one of the most common social instruments in our society, was created for the purpose of bringing pupils and teachers together, and for mobilizing resources for educational purposes. But in a society that is so complex, there are many interests and divergent viewpoints. Some of these are relative to education and to the administration of the educational system, and consequently have considerable impact on the overall educational program. As a result, there is a need for some central agency to review constantly the practices and procedures in both the learning process and in the administration and supervision of the educational system. While local interests, needs, and authority must always be kept in mind, the central focus of responsibility for education in a state must reside in the agency created for this purpose--the state educational agency.

State educational agencies should be in a strategic position in the structure of education in America. The chief state school officer and his staff, constituting the department of education, are responsible for the long-range planning and professional leadership of a state's educational system. Virtually no other state institution is in a position to wield such influence for the improvement and advancement of education.

But what does this mean for those interested in developing effective state educational agencies? If one believes that the state departments of education are to serve the state adequately in a planning and leadership role, then it is obvious that they should be staffed with personnel equal in training and competency to the top-quality personnel employed in the larger school systems, universities, the U. S. Office of Education, and industry. Few SEA's are in a position to compete favorably for top-quality personnel. The political "spoils system," low salaries, and less-than-satisfactory fringe benefits hamper and restrict the employment of top-quality personnel. As Johns has said:

> If a state department of education is to compete with the major universities...for top-quality personnel it must be able to pay salaries considerably in excess of $20,000 annually for its key personnel. Furthermore, SEAs must be able to pay a beginning salary of at least $12,000 annually in order to attract promising, young, inexperienced doctoral graduates and a considerably higher beginning salary to attract experienced principals and supervisors....[1]*

Another major problem confronting state educational agency personnel is the changing role of education. Throughout the civilized world the role of education has changed. In the past, many countries considered education above the elementary level to be a luxury or a special privilege reserved for only a few. Before World War II, the United States gave only limited attention to providing for education beyond the secondary level.

Today, however, the advanced nations of the world are beginning to recognize that education is the key to economic growth--and even to national survival. In the United States, Congress has provided many substantial categorical federal grants designed to improve education. In Kurth's study of the 47 acts of Congress from 1862-1965 relating to elementary, secondary, and higher education, only 16 were passed prior to 1958.[2]

Another issue currently hampering the effectiveness of state educational agencies is the lack of adequate information required for the agency's planning and leadership functions. Educational planning today is viewed as a means of achieving the short and long-range goals of the institution. *Educational planning is the process of determining goals and objectives, obtaining and analyzing pertinent information that brings into focus present and emerging problems and needs, obtaining agreement on procedures and activities designed to meet those needs so objectives can be achieved, and assessing the degree of attainment.* However, if the "right" kind of information is not available, efforts to engage in serious educational planning are hindered. Why do SEA's suffer from a lack of information? Wherein lies the problem? Are SEA's actively attempting to resolve the situation?

This study is concerned with identifying plausible answers to the types of questions noted above--and consequently with the development and implementation of information and planning systems within state education agencies. In order to do this, it was necessary to develop more specific questions, including:

- Have SEA's identified and started a planned program of activities designed to provide the agencies with a management information system (MIS)?
- Do SEA's currently have under development a general information system from which data from the MIS can be derived?
- What organizational structure is present in SEA's for guiding the development of a MIS?

*All footnote references are to be found at the end of this report.

- What kinds of data processing methods and equipment are being used by SEA's in processing information?
- What source of knowledge and skill are SEA's using in their information system development and expansion?
- What problems and difficulties are SEA's experiencing that tend to restrict the design and development of a MIS?
- Do SEA's believe that they should provide resources for assisting local and regional educational institutions in developing a MIS at their level?
- Have SEA's started a planned program of activities designed to provide the agencies with a planning-programming-budgeting-evaluation system (PPBES)?
- What basic elements of a PPBES have been implemented in SEA's?
- What organizational structure is present in SEA's for guiding and directing the establishment of a PPBES?
- Have SEA's provided in-service training opportunities for SEA staff and for other personnel outside of the SEA?
- What problems and difficulties have SEA's encountered that hinder their establishment of a PPBES?
- What sources of information and/or training do SEA's believe to be the most practical in improving the skill and knowledge of SEA staff in the concepts of PPBES?

Section Two

PLANNING SYSTEMS

American education, when considered in its larger societal context might be depicted as a separate and unique force dedicated to the improvement of society through the deliberate fostering of mechanisms that produce change. Thus, education serves in some instances as a leader, as described by Counts[3] and in other instances as a follower of society, as indicated by Commager.[4] The many major societal problems (expansion and mobility of the population, emergence of the space age, acceleration of automation, the ideological conflict, pollution, civil rights, etc.) have made educational problems infinitely more complex than could have even been imagined thirty years ago. To deal with this assortment of tremendously complex problems, it is absolutely necessary to develop better information and planning systems within and for education, in order that we can bring our societal resources to bear on these problems in the most efficacious manner.

Evolution and Development

Prior to the 1900's state education agencies consisted of little more than small groups of people who were engaged in the collection of various statistical facts concerning the status of public elementary and secondary education in the state. The total number of employees in all SEA's was approximately 177. The chief functions in the early 1900's were collecting, tabulating, and editing of educational statistics in terms of attendance, teachers, term and school finance.[5]

During the 1900-1930 period, state education agencies were chiefly concerned mostly with inspectoral duties. From 1930 to 1950 they continued to gather facts, but they began to assume additional responsibilities such as establishment and maintenance of minimum standards, reporting to the state legislature, and some leadership activities. The evolution of the federal-state-local government alliance--or partnership--to expand and improve education places state education agencies in position to provide even more effective leadership for education in the future.

Federal assistance to public elementary and secondary education prior to 1958, was relatively insignificant. Categorical aid had been provided in the vocational education, vocational rehabilitation, and federally impacted areas, but it was not until enactment of the National Defense Education Act (NDEA) in 1958 that the federal government began to provide substantial financial assistance for other areas and agencies of education.

Titles III, V-A, and X of NDEA provided funds for improvement of administrative, supervisory, guidance-counseling, testing, and statistical services. Yet this aid was minimal in comparison with that authorized by Title V of the Elementary and Secondary Education Act (ESEA) of 1965.

The greater interest of state education agencies in leadership activities, as evidenced by the increased role during the 1950's, coupled with significant increases in federal assistance, has enabled the agencies to occupy new and improved levels of importance in public elementary and secondary education. As a result, state education agencies are:

- Becoming better prepared to provide substantive leadership in many educational problem areas;
- Establishing improved recruitment policies;
- Increasing their efforts to provide vigorous leadership in state-wide educational planning; and
- Developing different and improved organization structure for education.

Johns recently wrote that the major functions of SEA's in the future will be to provide: (1) professional and political leadership relating to the introduction and implementation of educational policies and programs and a linkage between local school systems and the federal government.[6]

The role of the state education agency has shifted from inspectoral and statistic gathering to a new perspective--one which finds the agency as the keystone in federal-state-local relations. This relatively new position holds great promise for effecting state-wide improvements in education. With this new perspective, many improvements within the entire state education agency are mandated, and this is especially true in the area of information systems.

Traditional free-standing information systems of the type utilized in the past will not meet the increased needs of state education agencies. Such systems are not efficient in terms of accuracy and timeliness and are not economical in terms of cost-benefits. Application of recently developed methods and products of technology to the problem of supplying information to the policy and decision-makers is essential if the state education agency is to adequately perform its emerging role in the SEA. Several appropriate techniques now available are:

- Cost accounting procedures.
- Cost-benefit and cost-effectiveness studies.
- Information systems.
- Planning Programming Budgeting and Evaluation Systems (PPBES).
- Program Evaluation and Review Techniques (PERT).

INFORMATION SYSTEMS

Several developments have served to stimulate and assist in the evolution of information systems in SEA's. The Council of Chief State School Officers, for example, recognized the need for compatibility of data among the various local districts, SEA's, and U. S. Office of Education, and as early as 1951 requested that the U. S. Office of Education cooperate with the State Education Agencies to seek the type of compatibility needed. The combined planning helped to initiate a program that resulted in the development of a series of USOE handbooks relating to educational accounting.

Title X of the National Defense Education Act (NDEA) was concerned with the improvement and expansion of statistical services of state education agencies, and this provision of NDEA laid the groundwork for the gathering of data, making statistical analyses, projections of needs and trends, and for improvement in educational information services.

In 1958, representatives of 13 midwestern state educational agencies began to meet together and discuss educational data processing. In 1961 the Midwestern Council on Research and Statistics was formed and in 1963, the Council of Chief State School Officers in cooperation with the U. S. Office of Education initiated a Committee on Educational Data Systems (CEDS), for the purpose of helping to solve the problems of compatibility and collection of data that existed both among the various states and at the national level.

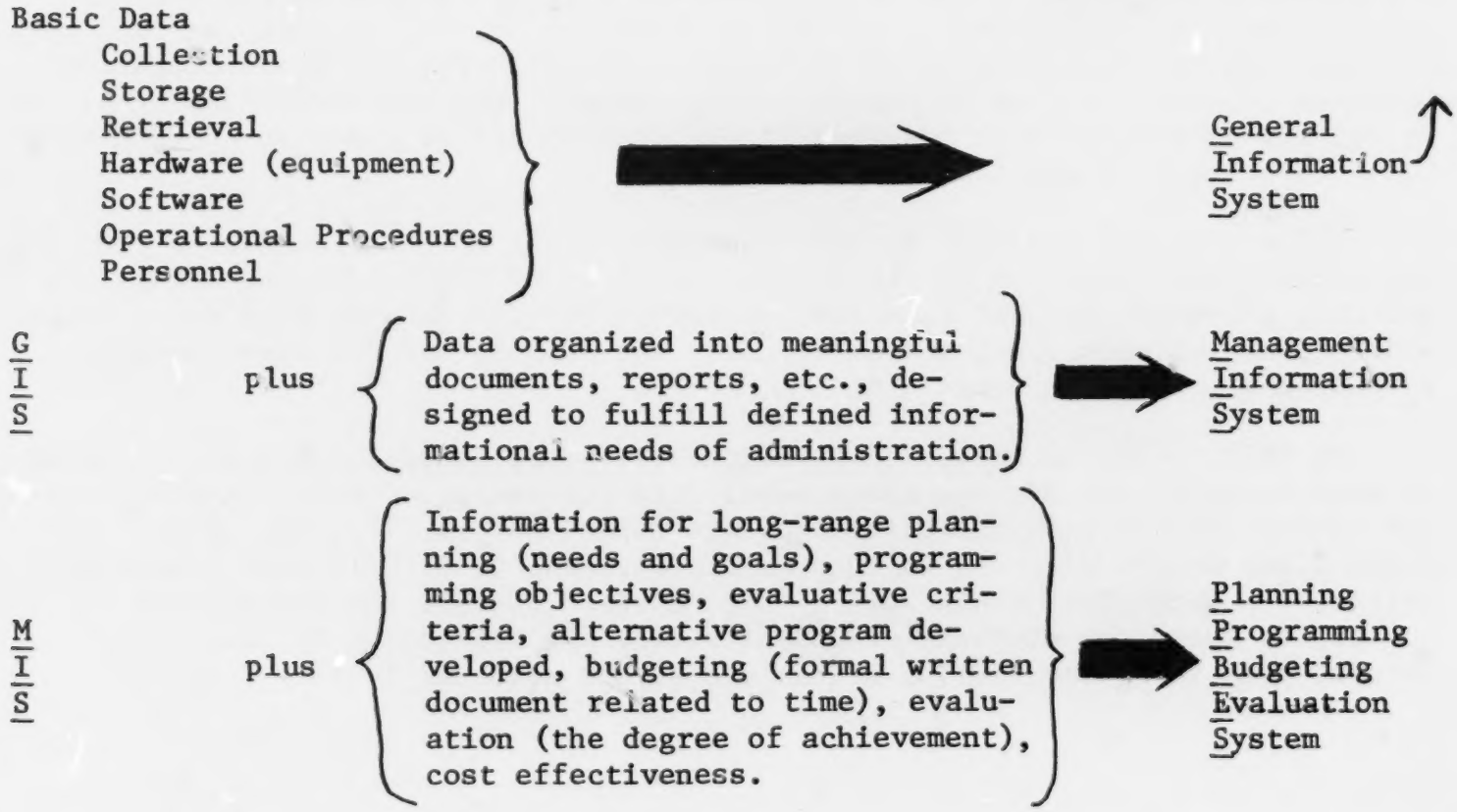
Recognizing a need for the improvement of education nationally, Congress enacted the Elementary and Secondary Education Act (ESEA) of 1965, and Title V of this act contained provisions for the strengthening of state education agencies. This Title encouraged, on a national scale, the type of communication that Title X of the National Defense Education Act had provided.

The 13 midwestern states that had been meeting together regularly recognized that if the educational information needs of state and federal agencies were to be met, a system had to be developed and implemented. As a result in the summer of 1965 a 13 state group of state education agency officials met for the purpose of seeking federal funds under Title V of ESEA in order to develop an integrated educational information system. In December of 1965, the Midwestern States Educational Information Project (MSEIP) proposal was submitted, and the proposal was approved by the U. S. Office of Education in January 1966. The project completed development of the information system during the 1969-70 fiscal year.

MANAGEMENT INFORMATION SYSTEMS

Increased national and state interest has resulted in considerable attention being given to the development of a management information system (MIS) within state education agencies. There is, however, some confusion relating to the definition of a MIS and its relationship to other information and planning systems in the agency. Information system concepts set forth by Conger[7] have been helpful in clarifying the confusion. Figure I depicts the relationship of various information systems and a PPB system.

Figure I. The Relationship of a MIS to Other Systems


Basic Data
Collection
Storage
Retrieval
Hardware (equipment)
Software
Operational Procedures
Personnel
General Information System
GIS
plus
Data organized into meaningful documents, reports, etc., designed to fulfill defined informational needs of administration.
Management Information System
MIS
plus
Information for long-range planning (needs and goals), programming objectives, evaluative criteria, alternative program developed, budgeting (formal written document related to time), evaluation (the degree of achievement), cost effectiveness.
Planning Programming Budgeting Evaluation System

As illustrated in Figure I, a MIS derives its information from the general information system (GIS). Inherent in this concept is that a general information system contains several major systems--each of which is composed of one or more subsystems. A major system involves the whole structure of the organization, while a subsystem is limited to a section or division of the organization. Every state education agency will have several major systems, together with an indefinite number of subsystems. What is needed, however, is some type of integration between the systems and subsystems. The MIS provides this linkage and assures managers that information needed for planning and decision-making activities is presented in its most useful form.

Integration of systems and subsystems is basically accomplished through the use of common definitions, coding techniques and selection of common data elements spanning the information system. The linkages between and among major systems and subsystems provide for interrelating data elements in one subsystem with those of the other subsystems. Thus, data are converted to usable information through the concept of integration.

Obviously, careful planning and much forethought by each management and operational level is absolutely necessary if an integrated system is to be developed. It is essential, however, to distinguish between data and information.

> Data are facts or statistics, unrelated and uninterpreted, whereas information is knowledge derived from the organization and analysis of data which is useful in achieving the objectives of the organization.[8]

In addition to distinguishing between data and information, those planning for development of a MIS in a state education agency must also determine the educational specifications of the system. The definition of educational specifications is the determination of what information is to be collected, from whom it is to be collected, when it is to be collected, and how it is to be used.[9]

Technology has given education the tools for creating a MIS--what remains to be done is the design, development, and implementation of the system itself. While much work in all levels of education (local districts, SEA's, and higher education) is currently under way, much more will have to be done. Efforts will have to be made to reduce--or eliminate--the differences in the background, interests and training of those whom the MIS is designed to serve, and to bring about a more effective degree of communication between those who develop the system and those who use it. As these and similar efforts are made, educational leaders will have more and better information upon which to formulate policies and make decisions.

PLANNING-PROGRAMMING-BUDGETING-EVALUATION SYSTEMS

An analysis of the literature relating to planning-programming-budgeting and evaluation systems (PPBES) reveals differing opinions as to the origin and meaning of the term. In most instances the terms are adequately defined by the authors, but they are often used by others to mean something beyond the original definition given. Knezevich adequately described the confusion:

> Program budgeting has become a popular term during the past decade. Its meaning is not clear. Some use the term as a synonym for PPBS, even though the originators of PPBS seldom mentioned program budgeting; others insist that the two phases are not synonymous.[10]

Another writer in the PPBS field has described program budgeting as a sub-unit of a more comprehensive approach to the study of organizational activities, which, for lack of a more descriptive term may be called systems analysis.[11]

Both Knezevich and Hartley define program budgeting as a subset of a PPBES, a position that is supported by the work of Hill and Mattox.[12] However, Haggart describes program budgeting as:

> Basically a resource allocation system--stresses the setting of objectives, grouping activities into programs to meet the objectives, identifying the resources required by the programs, and measuring the effectiveness of the programs in meeting the objectives.[13]

The Haggart definition more closely resembles most current definitions of PPBES with some slight modification in terms or in order of the elements.

Semantics still plague the field but there is a growing body of knowledge which indicates that agreement is being reached on the broader definition of PPBES as developed by the Research Corporation of the Association of School Business Officials which is embodied in the concepts of their "Educational Resource Management Design."

It should be obvious that most of the writers, when using the terms PPBS or PPBES, are speaking about the same processes. Some are, however, using them from different orientations.

The origin of PPBES has been expounded upon by many writers. Some have indicated that PPBES was the brain-child of the U. S. Department of Defense. Others attribute it to other sources. But regardless of historical development, the general consensus among educators is that the movement toward a widespread adoption of PPBES is quite evident and that some form of the system will exist in many educational institutions within the next decade. Nyquist portrays the concern of educational leaders in his statement:

> "There is a growing practice for state governments to engage in activities relating to PPBS...following the example of the Federal government. State education departments reluctant to launch program budgeting will undoubtedly find soon enough that the initiation of program budgeting procedures by the U. S. Bureau of the Budget will be reflected in future federal criteria governing state and local applications for Federal assistance in many program areas. States would do well to work closely with Federal officials in order to ensure that state and Federal programming systems are complimentary and mutually supporting."[14]

Section Three

MIS AND PPBES IN STATE EDUCATION AGENCIES

As has already been indicated, 50 SEAs and six American Territories were sent questionnaires in an attempt to gather information concerning MIS and PPBES in state education agencies. Forty-four SEAs and two American Territories responded with data that could be included in these findings. The returned questionnaires for both MIS and PPBES represented 82% of the total population. The remaining ten SEAs not returning forms either gave no reply, or did not return data in time to be included in the study.

In Section One thirteen questions were listed as important for investigation. In this section each question is restated, and descriptions of returned data are provided.

Planning for and Development of MIS in State Education Agencies

Question 1: Have SEAs identified and started a planned program of activities designed to provide the agencies with a management information system (MIS)?

Twenty-one of the forty-six responding SEAs indicated the existence of a full or partial MIS within their agency. However, only twenty stated that a separate MIS design division existed with the range in years of operation from 0 to 20, with the majority (14) under five years. (See Table 1)

Question 2: Do SEAs currently have under development a general information system from which data for the MIS can be derived?

Of those states indicating the existence of certain elements of a general information system, the internal subsystems identified by frequency were: Accounting, 35; Personnel, 33; Space, 14; Inventory, 20; Budget, 31; and Program, 17.

Although not all of the subsystems noted are fully operational, most states have indicated that adequate operational activities will exist within the next five years.

Integration of files between subsystems is accomplished internally by common codes and definitions in 18 states, and by machine file design in 14. External integration is accomplished by common codes and definitions in 25 states, and by machine file design in 20.

Question 3: What organizational structure is present in SEAs for guiding the development of a MIS?

Tables 1 and 2 present an overview of the organizational characteristics of MIS divisions as identified. Table 1 gives a state-by-state tabulation of the existence, organizational level, and budget for the MIS division, plus limited staff information on any identified forms division.

TABLE 1. MIS CHARACTERISTICS IN SEA's

STATES*	Has MIS (Full or Part)	Has MIS Design Division	Level of MIS Div.	Sub-Div. or Intra-Division	Budget for MIS Div. $1000s	Years of Operation	Has Forms Division	Total Staff	Number of Prof. Educ.	Number of Non-Prof. Educ.	Other Staff
Alabama	X										
American Samoa			2nd		None	0					
Arizona	No										
California	X	X	4th	X	1824	3					
Colorado	X	X	2nd	X	154	10					
Connecticut		X	3rd	X		20	X	9	2	3	4
Delaware							X	10	5	2	3
Florida	X										
Georgia	X										
Hawaii							X	7	3	0	4
Idaho	No										
Illinois							X	4	1	1	2
Iowa	No										
Kansas							X	2	2		
Kentucky		X	4th	X	320	7					
Maine	X										
Maryland							X	4	2	2	
Massachusetts	X	X	2nd								
Michigan	X	X	4th		552	2	X	4	1	1	2
Minnesota	X	X	2nd	X	304	4	X	1	1		
Mississippi	No										
Missouri	No										
Nebraska	X	X	2nd	X		3	X	3			
Nevada	No										
New Hampshire	No	X	2nd		None	0	X	2	1	1	0
New Jersey	X	X	4th	X	78	0	x	1		1	
New York		X	5th	X	353	3	x	14	14		
North Carolina	X	X	3rd	X	270		X	4	2	2	
North Dakota	X	X	3rd	X		4	X	2.5	.5	1	1
Ohio	X	X	4th		260	3	X	25.5	3.5	10	12
Oklahoma	No										
Oregon		X	3rd		130	.5	X	5		3	2
Pennsylvania		X	2nd		741	3					
Rhode Island	X										
South Carolina	X						X	17	6	5	6
South Dakota	No										
Tennessee			2nd	X	157	11	X				
Texas	X	X	5th		582	2	X	14	2	1	11
Trust Territories of the Pacific	X										
Utah							X	.4	.2	.2	
Vermont	X						X	7	4	0	3
Virginia	X	X	other			6	X	10	3	5	2
Washington	X	X	5th	X	100						
West Virginia							X	18	7	3	8
Wisconsin	No										
Wyoming		X	other	X	43	2					

*States not listed did not respond.

Table 2 provides a tabulation of staff by title and number, and indicates the MIS division. While no full organizational structure can be inferred from this table, the numerical size and frequency of MIS staff, coupled with the level within the organizational structure shown in Table 4, infers the potential organizational structure for the development of a MIS in respective SEAs.

Question 4: What kinds of data processing methods and equipment are being used by SEAs in processing information?

Table 3 shows the methods and equipment used by respective SEAs in processing information for current needs. Although numbers of each type of equipment were reported and listings of miscellaneous equipment not named in Table 3 were included in some reports, the table satisfactorily depicts the scope of equipment for those SEAs using electronic methods.

Table 4 indicates that particular computer language now in use with an indication of the number of years the respective SEAs have been using a computer. As noted, COBOL is the most used language, with FORTRAN next in popularity. Only eleven of the 36 states using computers have had them for over five years.

Question 5: What source of knowledge and skill are SEAs using in their information system development and expansion?

To expand the present MIS, 22 SEAs indicated that they acquired new machines, 19 - employed additional personnel, 5 - converted to a new MIS model, and 11 - other methods entailing combinations of the above. As a source of developmental knowledge and skill, 24 SEAs are using their own SEA staff developed model, 2 are using a private consulting firm, 13 are using a combination of their own staff supplemented by private consultants, and 12 are using other models, such as MSEIP or USOE guidelines.

Question 6: What problems and difficulties are SEAs experiencing that tend to restrict the design and development of a MIS?

The following listing (Table 5) shows the frequency noted by SEAs regarding their basic developmental problems with MIS:

TABLE 2. MIS DIVISION STAFFING

STATES*	Total of Staff	Assistant Supt.	Associate Supt.	Director	Chief	Accountants	System Anal.	Programmers	Machine Optrs.	Key Punch	Supervisors	Editors	Clerks	Secretaries	Statisticians	Librarian	Consultant	Specialist Data Systems	Other
Alabama	17						1	6	3	6	1								
American Samoa																			
Arizona																			
California																			
Colorado	13			1			4						4	2	1		1		
Connecticut																			
Delaware																			
Florida																			
Georgia																			
Hawaii	7			1									4						2
Idaho																			
Illinois																			
Iowa																			
Kansas				2															
Kentucky	23			1			4	6	3	7	1			1					
Maine																			
Maryland																			
Massachusetts																			
Michigan	4						1							1			2		
Minnesota	7			1			3			1				2					
Mississippi																			
Missouri																			
Nebraska				1	1														
Nevada																			
New Hampshire	2						1				1								
New Jersey	35	1	1	3			1	4	3	7	5		6	1	2				1
New York	14			1	2										5			5	
North Carolina																			
North Dakota																			
Ohio				1	1		4	6	4	5				2			2.5		
Oklahoma																			
Oregon	12		1	1			2	2	1	3				2					
Pennsylvania				1	5		12	12	10	10	3		3	3					2
Rhode Island																			
South Carolina																			
South Dakota																			
Tennessee	16			1			2	4	2	3	1		1	1	1				
Texas	40			2	3	2	7	8		1	1		10	2	2	2			
Trust Territories of the Pacific																			
Utah																			
Vermont	7				1		1	1					1	2					1
Virginia	24			1			2	3	2	6	3			4					3
Washington																			
West Virginia	14	.5		2.5			1	2	2	2	1		1	1					
Wisconsin																			
Wyoming	5			1				1.5					2	.5					

*States not listed did not respond.

TABLE 3. INFORMATION COLLECTION METHODS OF SEA's

STATES*	Manual	Electro-Mech.	Unit Record	Electronic	Adding Machine	Calculator	Key Punch	Sorter	Reproducer	Collator	Printer	Computer	Tape Drives	Disk Drives	Drum	Data Cell	Remote Terminals
Alabama				X	X	X	X	X		X	X	X	X	X			X
American Samoa	X				X	X											
Arizona				X	X	X	X	X		X		X	X				
California				X			X	X	X	X	X	X	X	X			X
Colorado				X								X	X	X			
Connecticut		X	X		X	X	X				X						
Delaware		X		X	X	X	X	X		X	X	X		X			
Florida				X	X	X	X	X	X	X	X	X	X	X		X	X
Georgia		X				X	X	X	X	X	X	X	X	X			X
Hawaii				X			X	X	X	X	X	X	X	X			
Idaho		X		X	X	X	X	X	X	X	X	X	X	X			
Illinois			X	X	X	X	X	X	X	X	X	X	X	X			
Iowa	X	X		X	X	X	X	X	X		X	X	X				
Kansas		X	X	X	X	X	X	X	X	X	X	X	X	X			
Kentucky	X		X	X	X	X	X	X	X		X	X	X	X			
Maine	X		X	X	X	X	X	X	X	X	X	X	X	X		X	
Maryland				X	X	X	X	X			X	X	X	X			
Massachusetts			X	X	X	X	X	X	X	X	X	X	X				
Michigan		X	X				X	X	X	X	X	X	X				
Minnesota				X	X	X	X	X	X	X	X	X	X	X		X	
Mississippi				X	X	X	X	X			X	X	X				
Missouri				X	X	X	X	X		X	X	X	X				
Nebraska			X	X			X	X	X	X	X	X	X	X		X	X
Nevada	X	X		X	X	X											
New Hampshire	X		X	X	X	X	X	X	X	X		X					
New Jersey		X	X	X	X	X	X	X		X		X		X			
New York				X		X	X	X	X	X	X	X	X	X			X
North Carolina			X		X	X	X	X	X	X	X						
North Dakota				X	X	X	X	X	X	X	X	X	X	X			
Ohio				X			X	X			X	X	X				
Oklahoma	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X
Oregon			X	X			X	X	X	X	X	X	X	X			
Pennsylvania			X	X			X	X	X	X	X	X	X				
Puerto Rico																	
Rhode Island		X	X	X	X	X	X	X	X	X	X	X	X	X			
South Carolina				X			X	X		X	X	X	X	X			X
South Dakota		X	X	X	X	X	X					X	X	X			
Tennessee		X		X	X	X	X	X	X	X	X	X	X	X			
Texas		X			X	X	X	X	X	X	X	X	X		X		
Trust Territories of the Pacific	X				X	X											
Utah		X	X	X	X	X	X	X	X	X	X	X	X	X			
Vermont		X		X	X	X	X	X	X	X	X	X	X	X			
Virginia				X	X	X	X	X	X	X	X	X	X	X			
Washington		X		X	X	X											
West Virginia				X			X	X			X	X	X				
Wisconsin				X	X		X	X	X	X	X	X	X	X			
Wyoming				X		X	X	X	X	X	X	X	X			X	

*States not listed did not respond.

TABLE 4. COMPUTER LANGUAGE

STATES*	Years Had Computer	COBOL	FORTRAN	PL-1	RPG	Assembler	BAL	Autocoder	Other
Alabama	6			X	X	X			
American Samoa	0								
Arizona	5						X		X
California	8	X							X
Colorado	0	X			X				
Connecticut	0								
Delaware	3	X			X			X	
Florida	10	X		X			X		
Georgia	5	X							
Hawaii	4	X	X	X	X	X			
Idaho	3	X			X			X	
Illinois	7	X							X
Iowa	7							X	
Kansas		X							
Kentucky	5	X	X						
Maine	9	X	X		X		X		
Maryland	1	X	X						X
Massachusetts		X	X						
Michigan	2	X							
Minnesota	0	X	X						
Mississippi	0	X							
Missouri	3	X	X		X		X		
Nebraska	6								
Nevada	0								
New Hampshire	0	X							
New Jersey	4	X						X	
New York	7	X							X
North Carolina	0								
North Dakota	3	X			X		X		
Ohio	3	X							
Oklahoma	3	X	X		X	X			
Oregon	0	X		X					
Pennsylvania	3	X							X
Rhode Island	0								
South Carolina	3	X			X				
South Dakota	6	X							
Tennessee	3	X							
Texas		X			X	X			X
Trust Territories of the Pacific									
Utah	1.5	X	X		X		X		
Vermont		X							
Virginia	6	X	X		X	X			
Washington	6								
West Virginia	4					X			
Wisconsin	3.5	X		X	X		X		
Wyoming	4	X	X		X	X			

*States not listed did not respond.

TABLE 5
BASIC DEVELOPMENTAL PROBLEMS

Number of SEAs	Nature of Problem
29	a. Lack of understanding and knowledge concerning complexity of a MIS in the SEA.
7	b. Lack of an adequately skilled outside source of manpower.
38	c. Financial restrictions (limited funds).
21	d. Lack of appropriate planning structure in SEA.
3	e. MIS models or guidelines not appropriate.
24	f. SEA administration hasn't assigned a high enough priority to the task of designing and developing a MIS.
9	g. Systems technology (software) is lacking.
3	h. Machines (hardware) technology is not developed enough.
11	i. The time required to design and develop a MIS discourages SEA's from starting the activity.
13	j. Other - describe.

Question 7: Do SEAs believe that they should provide resources for assisting local and regional educational institutions in developing a MIS at their level?

Thirty-five SEAs indicated that SEAs should provide aid, such as personnel and funds, for developing and implementing MIS in local and regional educational institutions, with five SEAs replying negatively. On the question of providing leadership (models, guidelines) in developing MIS for local and regional educational organizations in the state, all responding SEAs indicated approval.

PPBES Planning and Development in SEAs

Question 8: Have SEAs started a planned program of activities designed to provide the agencies with a planning programming budgeting evaluation system (PPBES)?

Eighteen of the 46 SEAs reporting indicated that a PPBES has been started within their agency. Six of these were mandated by legislative action, seven by governor's orders, and the remaining five apparently initiated action on their own. Only two SEAs, New York (1964) and Wisconsin (1966) reported initiation prior to 1967. Table 6 shows the respective PPBES mandate by SEA with the approximate month of initiation.

TABLE 6. PPBES MANDATE

STATES*	Legislative Action	Governor's Order	Has Started Program
Alabama			
American Samoa			6-67
Arizona			
California		X	7-67
Colorado	X		9-68
Connecticut		X	10-67
Delaware			
Florida	X		1-70
Georgia			7-69
Hawaii	X	X	8-67
Idaho			
Illinois			7-69
Iowa			
Kansas			
Kentucky			1-69
Maine			
Maryland			
Massachusetts			
Michigan			
Minnesota	X		X
Mississippi			
Missouri			
Nebraska			
Nevada			
New Hampshire			
New Jersey		X	4-69
New York		X	6-64
North Carolina			
North Dakota			
Ohio			
Oklahoma			
Oregon			6-69
Pennsylvania		X	4-68
Rhode Island			6-69
South Carolina			
South Dakota			
Tennessee			
Texas			
Trust Territories of the Pacific		X	2-67
Utah			
Vermont			
Virginia			
Washington	X		7-69
West Virginia			
Wisconsin	X		4-66
Wyoming			

*States not listed did not respond.

Question 9: What basic elements of a PPBES have been implemented in SEAs?

Ten of the 17 SEAs indicated initial implementation of all eight listed PPBES elements, as presented in Table 7. Also, five more SEAs listed at least four or more but less than all eight of these elements were being implemented in their PPBES.

Question 10: What organizational structure is present in SEAs for guiding and directing the establishment of a PPBES?

Although lacking the capacity to formally chart the potential within an organizational structure to guide the development of a PPBES, Table 8 does provide an estimate of such a potential by showing the advisory group organizational level, size of staff involvement, budget, staff organizational level, and type of model in use. In general, SEAs have placed the PPBES staff in a top level administrative responsibility and are using their own devised PPBES model. Total staff involved is relatively small in comparison with size of SEA staff or the previously noted MIS staff numbers. However, in eleven of the 18 subject SEAs, responsibility has been assigned to one or more persons to develop a PPBES.

A concomitant facet of potential in the organizational structure for establishing a PPBES is the current status of information system development. Table 9 provides a self-explanatory check list by SEAs of the basic operational characteristics of the respective informational systems.

Question 11: Have SEAs provided in-service training opportunities for SEA staff and for other personnel outside of the SEA?

Twenty SEAs indicate a planned program to design, develop and operate a PPBES system. Twelve states have conducted in-service workshops for persons outside the SEA. Table 10 enumerates the specific SEA and the number of each type of workshop for reference of the reader.

Question 12: What problems and difficulties have SEAs encountered that hinder their establishment of a PPBES?

Using the list provided in the PPBES questionnaire, the frequencies of obstacles in implementing PPBES were reported as indicated in Table 11.

Question 13: What sources of information and/or training do SEAs believe to be the most practical in improving the skill and knowledge of SEA staff in the concepts of PPBES?

SEAs believe many sources of information and/or training are useful in upgrading their staff. Table 12 shows the frequency listing of those methods preferred. As noted, in-service workshops within the SEAs were most prevalent.

TABLE 7. PPBES ELEMENTS

STATES*	Goals	Objectives	Programs	Program Design	Program Codes	Program Budget	Multi-Year Resource Plan	Program Reports
Alabama								
American Samoa	X	X	X			X		
Arizona								
California	X	X	X			X	X	
Colorado	X	X	X		X			X
Connecticut	X	X	X	X	X	X	X	X
Delaware								
Florida	X	X	X	X	X	X	X	X
Georgia	X	X	X	X	X	X	X	X
Hawaii	X	X	X	X	X	X	X	X
Idaho								
Illinois								
Iowa								
Kansas								
Kentucky	X				X	X		
Maine								
Maryland								
Massachusetts								
Michigan								
Minnesota	X	X	X	X	X	X	X	
Mississippi								
Missouri								
Nebraska								
Nevada								
New Hampshire								
New Jersey	X	X	X	X	X	X	X	X
New York	X	X		X	X	X	X	X
North Carolina								
North Dakota								
Ohio								
Oklahoma								
Oregon	X	X	X	X	X	X	X	X
Pennsylvania	X	X	X	X	X	X	X	X
Rhode Island	X	X	X	X	X	X	X	X
South Carolina								
South Dakota								
Tennessee								
Texas								
Trust Territories of the Pacific	X	X	X	X	X	X	X	X
Utah								
Vermont								
Virginia								
Washington	X	X	X			X		X
West Virginia								
Wisconsin	X	X	X	X	X	X	X	X
Wyoming								

*States not listed did not respond.

TABLE 8. NUMBER OF STAFF - PPBES MODEL

STAFF*	STAFF									MODEL		
	Has Established Advisory Group	Has Internal Design Group	Level of Head	Total Staff	Professional-Educational	Professional-Technical	Other	Total Budget	Staff Level	Own	Private	Other
Alabama												
American Samoa	X	X	2nd	0	0	0	0	0	1st			X
Arizona				0	0	0	0	0				
California								0	1st	X		
Colorado			2nd	.9	.1	.5	.3	8,000	1st			X
Connecticut	X	X	3rd					30,000	1st			X
Delaware												
Florida		X	1st	2	1	0	1		1st	X		
Georgia	X		1st	0	0	0	0	0	1st	X		
Hawaii	X	X	1st	6	6	0	0	213,450	1st	X		X
Idaho												
Illinois												
Iowa												
Kansas												
Kentucky	X	X	3rd	3	3			25,000	2nd	X		
Maine												
Maryland												
Massachusetts												
Michigan												
Minnesota	X	X	4th	.5	.5			18,500	1st	X		
Mississippi												
Missouri												
Nebraska												
Nevada												
New Hampshire												
New Jersey	X	X	2nd	10	10			20,000		X		
New York		X	1st	5	1	2	2	63,000	1st	X		
North Carolina												
North Dakota												
Ohio												
Oklahoma												
Oregon		X	1st	12	7	5	0	65,739	1st	X		
Pennsylvania		X	1st	5	4	0	1	0	2nd			X
Rhode Island		X	1st	1.5	1	0	.5	8,780	1st		X	X
South Carolina												
South Dakota												
Tennessee												
Texas												
Trust Territories of the Pacific												X
Utah												
Vermont												
Virginia												
Washington									1st			
West Virginia												
Wisconsin		X	2nd	9	8	1	0	55,000	1st	X		
Wyoming												

*States not listed did not respond.

TABLE 9. CURRENT INFORMATIONAL SYSTEM CHARACTERISTICS

STATES*	Evolved Overtime	Modified Occasionally	No Particular Information System	Each Organization Division Handles Own Information	Designed Along USOE Handbook II Guidelines	Own Data Collection Forms for Each Division	Annual Budgets for Each Division Based on Function-Objective Classification	Outside Consulting Firm	Management Reports Prepared as Distinct Operation	Goals and Objectives not Directly Related to SEA	Criteria Applied Separately	Long-Range Planning	Operational, Middle and Executive Management Involved in Planning and Development	SEA Advisory Group Assisting Agency Personnel in Operation and Planning	Internal Information Systems
Alabama	X														
American Samoa	X														
Arizona	X	X	X		X	X	X		X	X	X			X	X
California			X				X				X				X
Colorado			X	X			X		X						X
Connecticut	X		X				X						X	X	X
Delaware		X	X		X	X				X	X		X	X	X
Florida	X	X				X	X						X		X
Georgia			X												
Hawaii		X			X		X			X	X	X	X	X	X
Idaho	X	X	X	X			X		X				X	X	X
Illinois	X						X						X	X	X
Iowa	X		X	X	X	X						X	X	X	X
Kansas	X	X		X		X	X		X	X	X			X	X
Kentucky	X			X			X						X	X	X
Maine	X	X		X	X	X	X				X			X	X
Maryland	X	X	X	X	X	X	X		X	X	X			X	X
Massachusetts							X						X	X	X
Michigan		X						X						X	X
Minnesota	X	X	X		X	X	X		X				X	X	X
Mississippi					X		X				X				
Missouri	X						X		X						X
Nebraska			X	X		X	X						X		
Nevada	X		X		X	X	X						X		X
New Hampshire	X	X	X	X	X	X	X			X	X			X	
New Jersey	X	X	X		X						X			X	
New York	X		X	X		X	X		X			X	X	X	X
North Carolina	X	X			X				X		X			X	X
North Dakota	X						X				X				X
Ohio	X						X		X				X	X	X
Oklahoma	X	X	X	X	X	X	X					X			
Oregon	X	X		X			X						X		
Pennsylvania	X	X	X		X	X	X		X	X	X	X	X		
Rhode Island	X		X		X						X				X
South Carolina	X	X	X		X	X	X								X
South Dakota	X			X			X								
Tennessee	X		X	X		X	X						X		
Texas	X					X	X					X	X	X	X
Trust Territories of the Pacific	X	X	X		X						X	X	X		
Utah	X	NA		X	NA	X	X	NA	X	NA	NA	NA	X	X	X
Vermont	X			X			X					X	X	X	X
Virginia	X	X				X			X						X
Washington	X														
West Virginia	X		X	X	X	X	X			X	X			X	X
Wisconsin	X			X									X		X
Wyoming	X	X	X		X		X		X		X		X		

*States not listed did not respond.

TABLE 10. PPBES PLANNING AND ACTIVITIES

STATES*	Planned Program	In-Service Training Workshop	External Workshops
Alabama		1	
American Samoa	70-71		
Arizona			
California			130
Colorado	70-71		
Connecticut	75		
Delaware	Indef.		
Florida	69-70	1	
Georgia	70-71		
Hawaii	NA.	8	
Idaho	75		
Illinois	70-71		
Iowa	75-76		
Kansas	70-71		
Kentucky		2	
Maine	71-72		
Maryland	NA		
Massachusetts	70-71		
Michigan			
Minnesota	70-71	4	
Mississippi			
Missouri	70-71		
Nebraska			
Nevada			
New Hampshire			
New Jersey		3	2
New York		10	5
North Carolina	71-72		
North Dakota	71-72		
Ohio		1	
Oklahoma			
Oregon		3	2
Pennsylvania	70-71	12	20
Rhode Island		2	1
South Carolina			
South Dakota			
Tennessee			
Texas			
Trust Territories of the Pacific			
Utah	72-73		
Vermont	71-72		
Virginia			
Washington	71-72		
West Virginia			
Wisconsin		11	26
Wyoming	72-73		

*States not listed did not respond.

TABLE 11
Obstacles to PPBES

Number of SEAs	Type of Obstacle
17	a. Lack of belief in that it is a better management system.
26	b. Lack of knowledge and skill resident in the SEA staff.
21	c. Lack of adequate internal organization in the SEA.
26	d. Lack of available funds.
22	e. Lack of appropriate PPBES models or designs for SEAs
2	f. PPBES is too expensive.
11	g. Fear of change.
4	h. Takes too long.
13	i. Other - please describe.

TABLE 12
Sources of PPBES Information

Number of States	
39	a. SEA sponsored in-service training workshops.
8	b. Professional association seminars.
18	c. Publications, such as, professional books, professional journals, etc.
14	d. Use of outside consulting firms.
20	e. Use of individual consultants.
8	f. College and university courses integrated into the regular curriculum.
10	g. College and university sponsored workshops of short duration.
14	h. State government sponsored workshops.
20	i. U. S. Office of Education sponsored intensive training sessions.
5	j. Other - please describe.

Section Four

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The concern of this study was to determine the status of the development and implementation of MIS and PPBES in SEA's. To accomplish this assessment a field survey was conducted which involved two questionnaires as the data collection instruments. The two questionnaires were sent to all 50 SEA's and the six American Territories. Forty-four SEA's and two American Territories returned completed questionnaires.

Specifically data were sought to assist in answering questions which were grouped into two major areas of concern: (1) systems planning and development and (2) administration and organization. The questions relating to systems planning and development were:

1. Have SEA's identified and started a planned program of activities designed to provide the agencies with a management information system (MIS)?

2. Have SEA's started a planned program of activities designed to provide the agencies with a planning programming budgeting evaluation system (PPBES)?

3. Do SEA's currently have under development a general information system from which data for the MIS can be derived?

4. What basic elements of a PPBES have been implemented in SEA's?

Questions concerning administration and organization were:

1. What organizational structure is present in SEA's for guiding the development of a MIS?

2. What organizational structure is present in SEA's for guiding and directing the establishment of a PPBES?

3. What source of knowledge and skill are SEA's using in their information systems development?

4. What kinds of data processing methods equipment is being used by SEA's in processing information?

5. What sources of information and/or training do SEA's believe to be the most practical in improving the skill and knowledge of SEA staff in the concepts of PPBES?

6. What problems and difficulties are SEA's experiencing that tend to restrict the design and development of a MIS?

7. What problems and difficulties have SEA's encountered that hinder their establishment of a PPBES?

8. Do SEA's believe that they should provide resources for assisting local and regional educational institutions in developing a MIS at their level?

9. Have SEA's provided in-service training opportunities for SEA staff and for other personnel outside of the SEA?

Summary

Although forty-four SEA's and two American Territories provided data for this study, the nature of the population was such as not to warrant generalizations beyond the scope of this study.

In the first area of concern (systems planning and development) the following observations are offered on the basis of the analysis of the data presented in Section Three.

In general the reporting SEA's have identified and begun a planned program of activities designed to establish a general information system. However, there is considerably less activity in the MIS and PPBES development areas. There is a wide range of MIS and PPBES development considering both staff and budgets. Some SEA's reported no activity while others provided data that indicate a high level of activity over a number of years in these two areas.

It is significant to note that of the 22 SEA's reporting organizational placement of MIS development groups, all but five placed the MIS division at the assistant superintendent's level or higher, with eight reporting the MIS division responsibility at the deputy superintendent's level.

Separate organizational structures have been formed for a design division and a forms division in the majority of SEA's reporting MIS capabilities.

MIS division staffing ranges from a low of two persons assigned to a high of 40 individuals involved in the various MIS activities.

Electronic methods were reported as the most used procedure for information processing and were combined with unit record and other mechanical procedures. Only eight states reported manual information processing methods. There was considerable uniformity in equipment among reporting SEA's.

Forty of the 46 states reported the availability of computers and accessory equipment for processing information. COBOL, by far, is the most often used programming language among SEA's.

The four main difficulties restricting MIS development that were listed by SEA's are: (1) lack of understanding and knowledge of a MIS, (2) financial restrictions, (3) lack of an appropriate planning structure, and (4) low priority for the task of designing and developing a MIS.

PPBES has been mandated within the SEA's almost equally by legislative action and by governors' orders with the initiation of the programs within the past three years. Of the 18 SEA's with initiated PPBES programs, 15 have indicated activity in most of the basic elements.

Basic obstacles for PPBES development were reported to be: (1) lack of belief in the system, (2) lack of knowledge and skill, (3) lack of adequate SEA internal organization, (4) lack of funds, and (5) lack of appropriate PPBES models.

Sources of skill and expertise for PPBES development were reported as coming primarily from within the SEA itself. Approximately half the SEA's reporting used outside consultants and were involved in U. S. Office of Education intensive training sessions.

Conclusions

The following conclusions relate to inferred planning and leadership capabilities of SEA's as associated with MIS and PPBES. The facts presented to the reader in the findings and summary sections of this report may suggest many possible conclusions. However, the following five general conclusions seem most pertinent to this study.

1. SEA's indicate definite awareness of and concern for the development of adequate programs for a MIS and PPBES. However, progress has been slow because of the general lack of understanding, limited funds, and organizational deficiencies.

2. SEA's have recognized the importance of MIS and PPBES organization placement by assigning responsibility for development at a top level position in the SEA organization.

3. Staffing is limited in relation to the recognized importance of this area, although equipment seems adequate in view of the staff and specific applications in operation.

4. PPBES remains a very recent innovation among almost all SEA's reporting.

5. Although SEA's seem aware of the importance of these areas, they do not appear to be seeking outside sources of help and assistance to improve skill and knowledge of staff.

Recommendations

Detailed recommendations could be given at this point both individually and collectively for the SEA's. However, the following recommendations seem applicable for most SEA's involved in this study and are relevant to national improvement of SEA leadership potential in the field of MIS and PPBES development.

1. In order that a stronger recognition for the usefulness of a MIS and PPBES with SEA's be attained, the applicability of each (to SEA's) should be promoted nationally.

2. Assistance should be provided to SEA's in establishing MIS and PPBES in their agencies. The use of external stimuli, e.g., U. S. Office of Education guidelines, outcomes of special projects, use of expertise in the field, and financial assistance as an incentive, would seem to be appropriate.

3. SEA's should integrate the MIS and PPBES development with all operational activities within their jurisdiction under a definite implementation program.

4. SEA's should further advance MIS and PPBES development within their state by assisting intermediate and local education agencies in the development of similar systems.

Footnote References

[1]R. L. Johns, "State Organization and Responsibilities for Education," in Implications for Education of Prospective Changes in Society, Edgar L. Morphet and Charles O. Ryan, eds. (Denver, Colorado: Designing Education for the Future, 1967), p. 260.

[2]E. L. Kurth, Federal Aid to Education (Gainesville, Florida: University of Florida, Florida Educational Research and Development Council, 1966).

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